

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

Transmitted herewith for filing is a patent application of GUY A. COSMOFor: VERTICAL BAGGING APPARATUS

Enclosed Are:

- [X] 12 page specification
 [X] with attached signed Declaration/Power of Attorney
 [] with attached unsigned Declaration/Power of Attorney
 [] sheet(s) of formal drawings(s)
 [X] 9 sheets(s) of informal drawings(s) (FIGS.1-9C)
 [X] an Assignment Recordation Form Cover Sheet and Assignment of the invention to: K.C. Technical Services, Inc.
 [] Priority is claimed under 35 USC 119 for the following application(s):

JC688 U.S. PTO
09/460836

12/14/99

[] a certified copy of the aforesaid application(s) with Claim of Priority Cover Letter is enclosed.

[] a certified copy of the aforesaid application(s) will be forwarded in due course.

[X] Preliminary Amendment

[] Information Disclosure Statement with PTO Form 1449 and copies of ___ references.

CLAIMS AS FILED

FOR	NUMBER FILED	NUMBER EXTRA	RATE	FEE
<hr/>				
TOTAL CLAIMS				
15 - 20				
0 X \$ 9.00				
\$0.00				
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INDEPENDENT CLAIMS				
2 - 3				
0 X \$ 39.00				
\$0.00				
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BASIC FEE- \$760				
REDUCED FEE-\$380	[] Independent Inventor	[X] Small Business Concern	\$ 380.00	
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TOTAL FILING FEE				
\$ 380.00				

[X] Small Entity Declaration of [] Independent Inventor [X] Small Business Concern

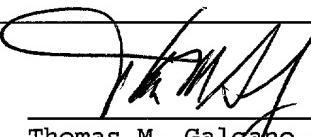
[X] The Commissioner is hereby authorized to charge any additional fees which may be required at any time during the prosecution of this application without specific authorization, except for the Base Issue Fee, or credit any overpayment to Deposit Account No. 07-0130. A duplicate copy of this sheet is enclosed.

[X] A check in the amount of \$420 is enclosed. This check covers:

[] the filing fee

[X] the filing fee and the Assignment recordal fee.

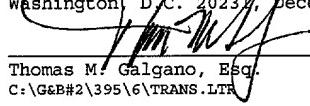
[] Other: _____



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Express Mail No.EL117197905US
December 14, 1999

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail" to Addressee service under 37 CFR 1.10, on the date indicated above, and is addressed to the Commissioner of Patents and Trademarks, Washington D.C. 20231, December 14, 1999.


, December 14, 1999

Thomas M. Galgano, Esq.
C:\G&B#2\395\6\TRANS.LTR

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT : GUY A. COSMO

SERIAL NO. :

FILED :

FOR : VERTICAL BAGGING APPARATUS

SMALL ENTITY DECLARATION FOR INDEPENDENT INVENTOR(S)

As a below-named inventor, I hereby declare that I am an independent inventor who (1) has not assigned, granted, conveyed, or licensed, and (2) is under no obligation under contract or law, to assign, grant, convey, or license, any rights in the invention, to any person who could not likewise be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization, as defined in 37 CFR 1.9.

 FOR SMALL BUSINESS CONCERN

I hereby declare that K.C. TECHNICAL SERVICES INC. is a business concern which qualifies as a small business concern as defined in §1.9(d) - namely, (1) whose number of employees, including those of its affiliates, does not exceed 500 persons; and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section; and that the exclusive rights to the invention have been conveyed to and remain with the above-identified small business concern.

I further declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful, false statements and the like, so made, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful, false statements may jeopardize the validity of the patent application or any patent issuing thereon.

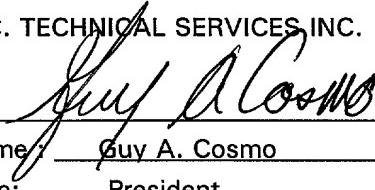
Each of the undersigned hereby grants the firm of **GALGANO & BURKE**, U.S. Federal Courthouse Building, 300 Rabro Drive, Hauppauge, New York 11788, U.S.A., the power to insert in this Small Entity Declaration any further identification which may be necessary or desirable to comply with the rules of the U.S. Patent and Trademark Office for filing and acceptance of this Declaration.

INVENTOR(S)

SMALL BUSINESS CONCERN:

K.C. TECHNICAL SERVICES INC.

By

Name: Guy A. CosmoTitle: PresidentDate : 12/10/99

Name:

Date:

PATENT
DOCKET NO.: 395-6

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT : GUY A. COSMO
FILING DATE :
FOR : VERTICAL BAGGING APPARATUS

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Dear Sir:

Preliminary to the initial Office Action, please amend
the above-identified application as follows:

IN THE SPECIFICATION

Please amend the specification as follows:

Page 7, line 12, change "she" to --during--

REMARKS

By this Preliminary Amendment, the Specification has been amended to correct an inadvertent error.

Accordingly, entry of the foregoing amendment is respectfully requested and an early and favorable action on the merits of the application is earnestly solicited.

Respectfully submitted,



Thomas M. Galgano
Registration No. 27,638
GALGANO & BURKE
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UNITED STATES SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT I, GUY A. COSMO, a citizen of the United States of America, residing at 71 Strathmore Village Drive, South Setauket, New York 11720, have invented certain new and useful improvements in an

VERTICAL BAGGING APPARATUS

of which the following is a specification.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates, in general, to the packaging of products in flexible bags or containers and, more particularly, relates to an improved apparatus for bagging a product in a deformable bag and sealing it therein.

2. State of the Art

The distribution of perishable items, such as produce, as well as non-perishable products in thin, usually transparent, plastic bags has become widespread over the years. Plastic deformable bags have considerable strength and, further, have storage capabilities which enhance product quality and extend useful life. Mass production of these bags through automated machines has made them particularly desirable, feasible and cost effective.

Prior art Figure 1 schematically illustrates a typical bagging apparatus 10. The apparatus 10 includes a roll of plastic 12 which is folded at one end 14. The roll of plastic 12 is located with its axis 16 horizontal and is fed through several feed rollers 18, 20, 22 until it assumes a vertical position. A spreading device 24 is arranged to open the free end 15 of the folded plastic so that a product may be placed between the folded plastic film. Prior art Figure 2 schematically illustrates a sealing device 28. The sealing device

would be located beneath the spreading device 24 in Figure 1. The sealing device 28 generally includes an L-shaped heated bar 30 and an L-shaped resilient sealing surface 32. The two L-shaped members 30, 32 are slideably mounted on rods 34, 36 so that they may be moved together and apart. As shown in prior art Figures 3A and 3B, the heated bar 30 is movable within a clamp 38 and has a rounded end 39. When the L-shaped members are brought together, the clamp 38 holds the plastic sheet 12 against the sealing surface 32 and the heated bar 30 moves forward against the plastic to heat seal it and sever it from the roll of plastic. The sealing and severing locations are illustrated at 31 and 33 in Figure 1. After sealing, a finished bag 40 is severed from the roll of plastic. A small strip of plastic 42 is left attached to the roll and is taken up by a trim spool 44.

The prior art bagging apparatus has several disadvantages. First, the product must enter the apparatus horizontally between the spreading apparatus and rollers. Second, it is difficult to alter the size of the bags to accommodate different sized products. Third, in order to prevent ragged uneven seals, the heated bar must be coated with a non-stick material. Nevertheless, repeated cycling causes some residual buildup of plastic on the heated bar since it must penetrate the plastic to sever the bag from the roll. The abrasion on the bar by the act of penetrating the plastic causes the non-stick coating to wear off.

SUMMARY OF THE INVENTION

It is therefore an object of the invention to provide a bagging apparatus which allows product loading from either above or the side.

It is also an object of the invention to provide a bagging apparatus which is easily adjustable to make a wide variety of different sized bags

It is another object of the invention to provide a bagging apparatus with an improved sealing and severing system.

In accord with these objects which will be discussed in detail below, the vertical bagging apparatus of the present invention includes a vertically mounted spool for dispensing a roll of centerfold plastic film with the fold in the upper position. A pair of vertical metering rollers are mounted adjacent to the spool for advancing the film from the spool. An adjustable generally inverted-V-shaped film inverted is mounted downstream from the metering rollers. A sealing and severing system is located beneath the film invertor and a trim spool is located beneath the sealing and severing system. The film invertor turns the film inside out, relocating the fold from the horizontal axis to the vertical axis. The film invertor also causes the open end of the folded film to be accessible from either above or the side. The film invertor is adjustable by raising

and lowering the apex of the inverted-V which relocates the horizontal location of the fold in the film. According to a presently preferred embodiment, the film invertor is made from flexible wire and the free ends of the wire are attached to a takeup shaft. According to the invention, the sealing and severing system includes a flat faced heated bar and a sharp contoured compliant sealing surface. This system provides sealing and severing without buildup of plastic material on the heated bar because the severing is actually performed by the cool sealing surface rather than by the heated bar. The sealing and severing system is preferably arranged on gear coupled double pivot arms and is actuated by a double piston arrangement. Additional objects and advantages of the invention will become apparent to those skilled in the art upon reference to the detailed description taken in conjunction with the provided figures.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic perspective view of a portion of a prior art bagging apparatus;

Figure 2 is a schematic perspective view of the sealing and severing portion of a prior art bagging apparatus;

Figures 3A and 3B are side elevational views of a portion of the prior art sealing and severing apparatus;

Figure 4 is a schematic perspective view of a portion of a vertical bagging apparatus according to the invention;

Figure 5 is a view similar to Figure 4 but with the sealing and severing system removed;

Figure 6 is an enlarged perspective view of the film invertor;

Figure 7 is a schematic side elevational view of the film invertor in three different positions;

Figure 8 is an enlarged perspective view of the sealing and severing system;

Figures 9a and 9b are side elevational views of the sealing and severing system; and

Figure 9c is an enlarged side elevational view of a portion of the sealing and severing system;

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to Figures 4 and 5, the vertical bagging apparatus 100 includes a vertically mounted spool 102 for dispensing a roll of centerfold plastic film 104 with the fold 106 in the upper position.

A pair of vertical metering rollers 108, 110 are mounted adjacent to the spool 102 for advancing the film 104 from the spool 102. A slack roller arm 112 is also provided between the spool 102 and the metering rollers 108, 110. An adjustable generally inverted-V-shaped film invertor 114 is mounted downstream from the metering rollers 108, 110. A sealing and severing system 116 is located beneath the film invertor 114 and a trim spool 118 is located beneath the sealing and severing system 116.

Turning now to Figures 5-7, the film invertor 114 is preferably made from a flexible wire 120 which is formed into an -inverted-V-shape by attaching the center 122 of the wire 120 to a lever 124. The free ends 126, 128 of the wire 120 are attached to a takeup shaft 130. The wire is spaced apart by loops 132, 134 so that it worms a generally triangular region between 132, 122, and 134. As seen best in Figures 5 and 7, the film invertor 114 turns the film 104 inside out, relocating the fold 106 rom the horizontal axis to the vertical axis. The film invertor also causes the open end of the folded film 104 to be accessible from either above or the side. As shown in Figure 7, the film invertor 114 is adjustable by raising and lowering the lever 124 which raises and lowers the apex of the inverted-V which relocates the horizontal location of the fold 106 in the film. Figure 7 illustrates three different sizes of film 104a, 104b, 104c and shows the respective locations of their folds 106a, 106b, 106c.

Referring now to Figure 8, the sealing and severing system 116 includes an L-shaped heated bar 140 and a corresponding L-shaped sealing surface 142. The heated bar 140 is mounted on a first pivot arm 144 and the sealing surface 142 is mounted on a second pivot arm. Each pivot arm has a pair of spaced apart pivot points 144a, 144b, 146a, 146b. The pivot points 144a and 146a are coupled to each other by a rod 148a and two gears 150a, 152a. The pivot points 144b and 146b are coupled to each other by a rod 148b and two gears 150b, 152b. The pivot arms 144, 146 are actuated by a pair of spaced apart piston actuators 154a, 154b, each having a piston rod 156a, 156b as shown in Figure 8. The gear and bar couplings allow the L-shaped members to maintain a parallel relationship she sealing and severing as illustrated in Figures 9a and 9b. As shown in Figure 9c, the heated bar 140 is flat faced and surrounded by a clamp 158. The sealing surface 142 is provided with a sharp contour 160. When the sealing and severing system is actuated, the clamp 158 holds the plastic film against the sealing surface 142 and the heated bar 140 moves forward to press the film 104 onto the sharp contour 160 of the sealing surface. This system provides sealing and severing without buildup of plastic material on the heated bar 140 because the severing is actually performed by the contour 160 on the cool sealing surface 142 rather than by the heated bar.

There have been described and illustrated herein a vertical bagging apparatus. While particular embodiments of the invention have

been described, it is not intended that the invention be limited thereto, as it is intended that the invention be as broad in scope as the art will allow and that the specification be read likewise. It will therefore be appreciated by those skilled in the art that yet other modifications could be made to the provided invention without deviating from its spirit and scope as so claimed.

Claims:

1. A vertical bagging apparatus for use with a roll of center folded packaging material, said apparatus comprising:
 - a) an upstream feeder spool for holding the roll of center folded packaging material, said feeder spool having a vertical axis of rotation such that when the center folded packaging material is unspooled, the center fold is substantially horizontal;
 - b) inversion means for reorienting the packaging material downstream of said feeder spool, said inversion means reorienting the packaging material such that the center fold is substantially vertical; and
 - c) sealing means for sealing the packaging material downstream of said inversion means.
2. The apparatus according to claim 1, wherein:
said inversion means is substantially inverted-V-shaped.
3. The apparatus according to claim 1, wherein:
said inversion means is adjustable to accommodate different sized packaging material.
4. The apparatus according to claim 1, wherein:
said inversion means is made from substantially flexible wire.

5. The apparatus according to claim 1, wherein:

said sealing means includes a heated bar having a flat head and a sealing surface having a sharp profile.

6. The apparatus according to claim 5, wherein:

said sealing means is a sealing and severing means for sealing the packaging material and severing it from the roll.

7. The apparatus according to claim 6, wherein:

said sealing and severing means includes two pivot arms and a piston actuator.

8. The apparatus according to claim 7, wherein:

said two pivot arms are coupled to each other by gears.

9. A vertical bagging apparatus for use with a roll of center folded packaging material, said apparatus comprising:

a) an upstream feeder spool for holding the roll of center folded packaging material; and

b) a downstream sealing and severing means for sealing the packaging material and severing it from the roll, wherein

said sealing and severing means includes a heated bar having a flat head and a sealing surface having a sharp profile.

10. The apparatus according to claim 9, wherein:

 said sealing and severing means includes two pivot arms and a piston actuator.

11. The apparatus according to claim 10, wherein:

 said two pivot arms are coupled to each other by gears.

12. The apparatus according to claim 9, further comprising:

 c) inversion means for reorienting the packaging material downstream of said feeder spool, said inversion means reorienting the packaging material such that the center fold is substantially vertical.

13. The apparatus according to claim 12, wherein:

 said inversion means is substantially inverted-V-shaped.

14. The apparatus according to claim 12, wherein:

 said inversion means is adjustable to accommodate different sized packaging material.

15. The apparatus according to claim 12, wherein:

 said inversion means is made from substantially flexible wire.

ABSTRACT OF THE DISCLOSURE

A vertical bagging apparatus includes a vertically mounted spool for dispensing a roll of centerfold plastic film with the fold in the upper position. A pair of vertical metering rollers are mounted adjacent to the spool for advancing the film from the spool. An adjustable generally inverted-V-shaped film inverted is mounted downstream from the metering rollers. A sealing and severing system is located beneath the film invertor and a trim spool is located beneath the sealing and severing system. The film invertor turns the film inside out, relocating the fold from the horizontal axis to the vertical axis. The film invertor also causes the open end of the folded film to be accessible from either above or the side. The film invertor is adjustable by raising and lowering the apex of the inverted-V which relocates the horizontal location of the fold in the film. According to a presently preferred embodiment, the film invertor is made from flexible wire and the free ends of the wire are attached to a takeup shaft. According to the invention, the sealing and severing system includes a flat faced heated bar and a sharp contoured compliant sealing surface. This system provides sealing and severing without buildup of plastic material on the heated bar because the severing is actually performed by the cool sealing surface rather than by the heated bar.

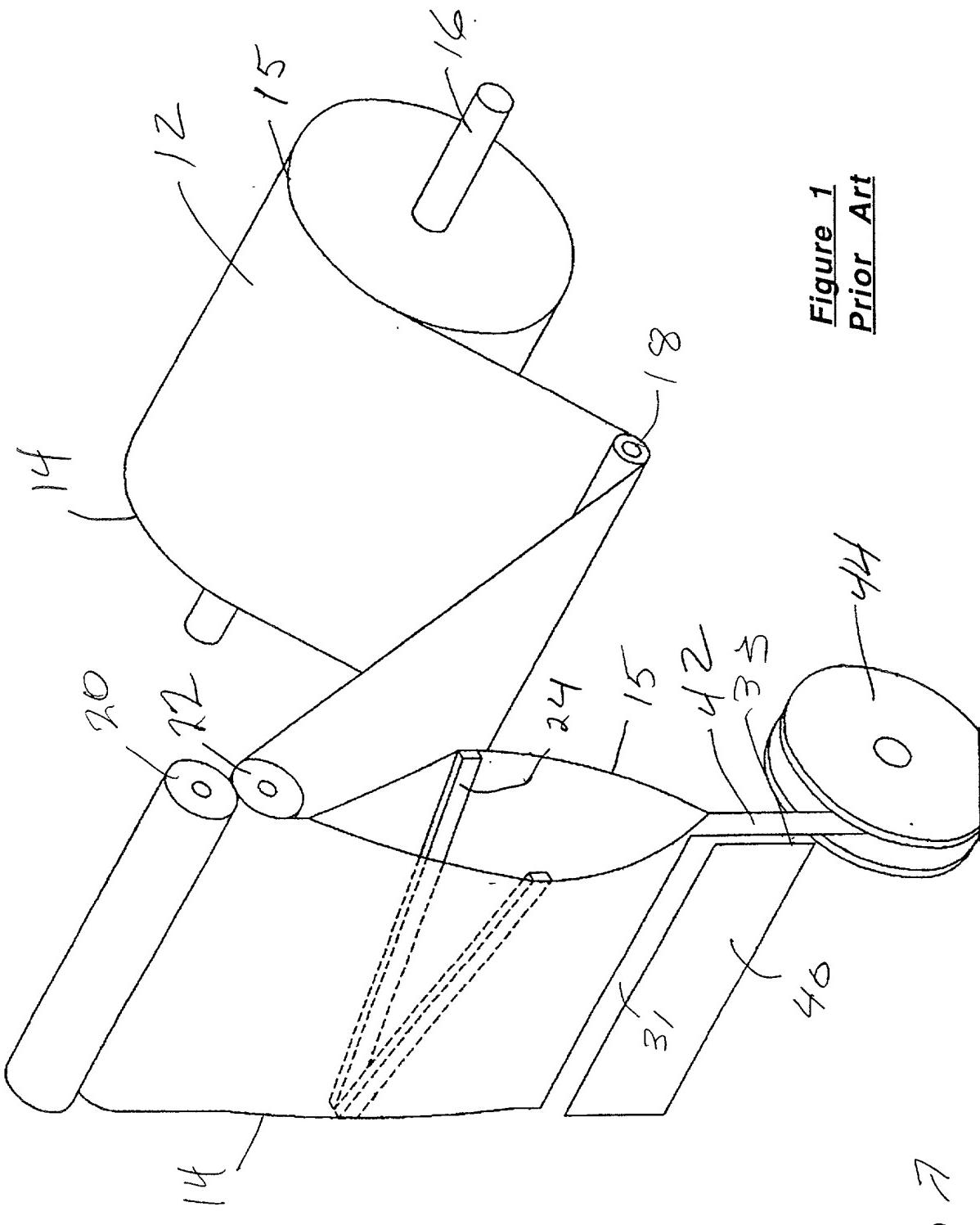
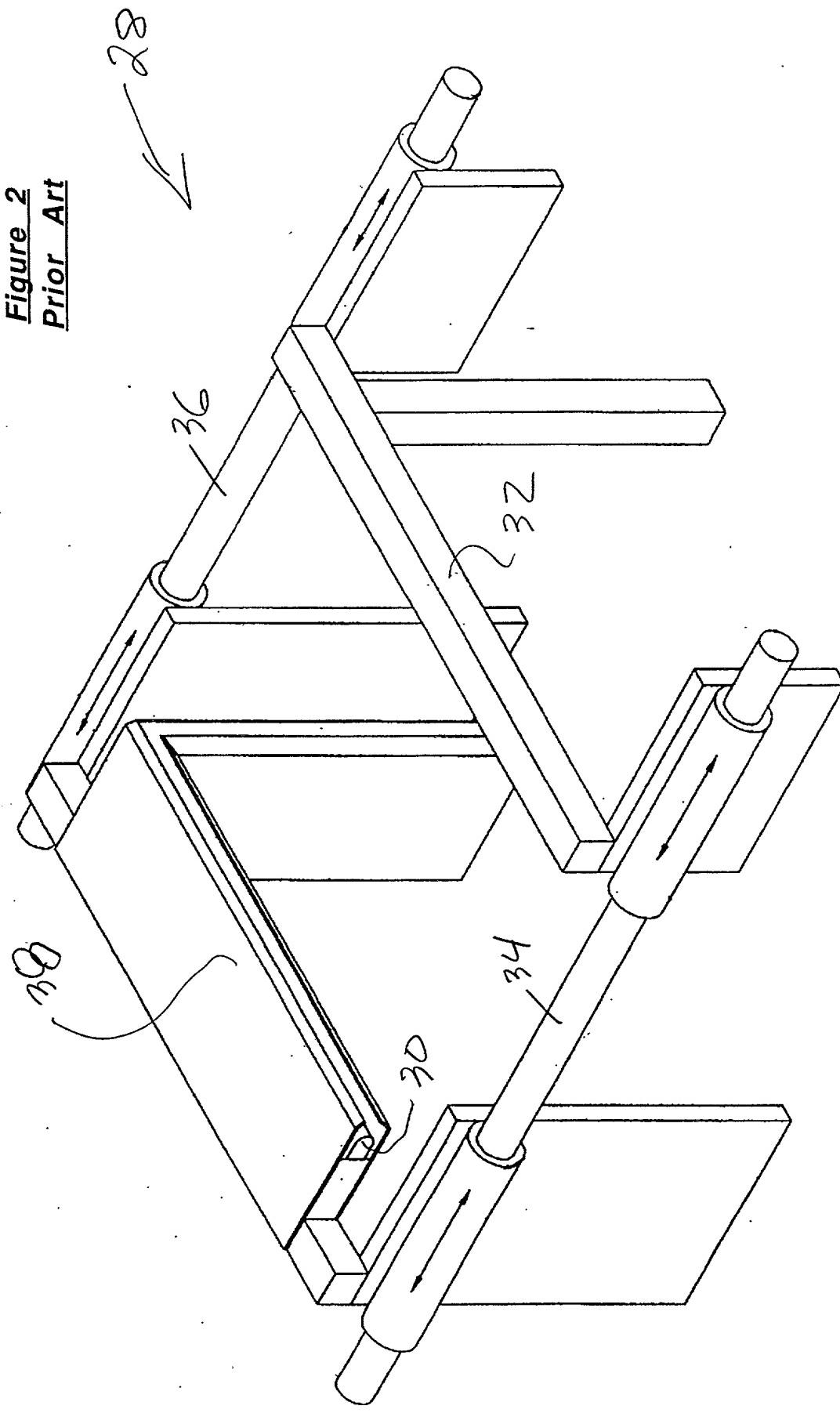


Figure 1
Prior Art

10 ↗

Figure 2
Prior Art



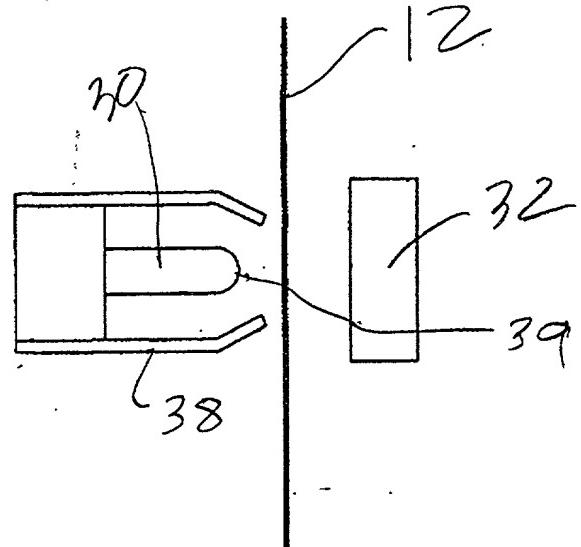


Figure 3A
Prior Art

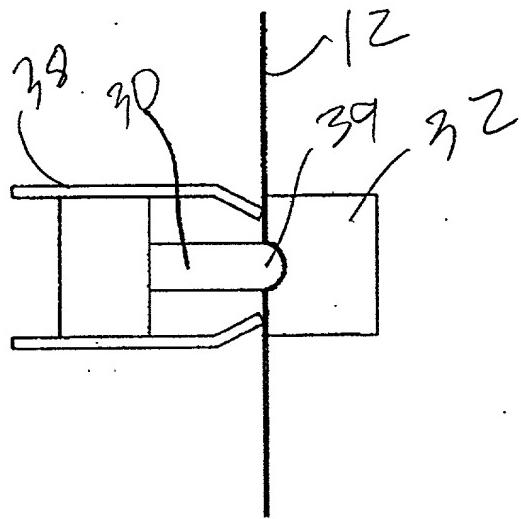


Figure 3B
Prior Art

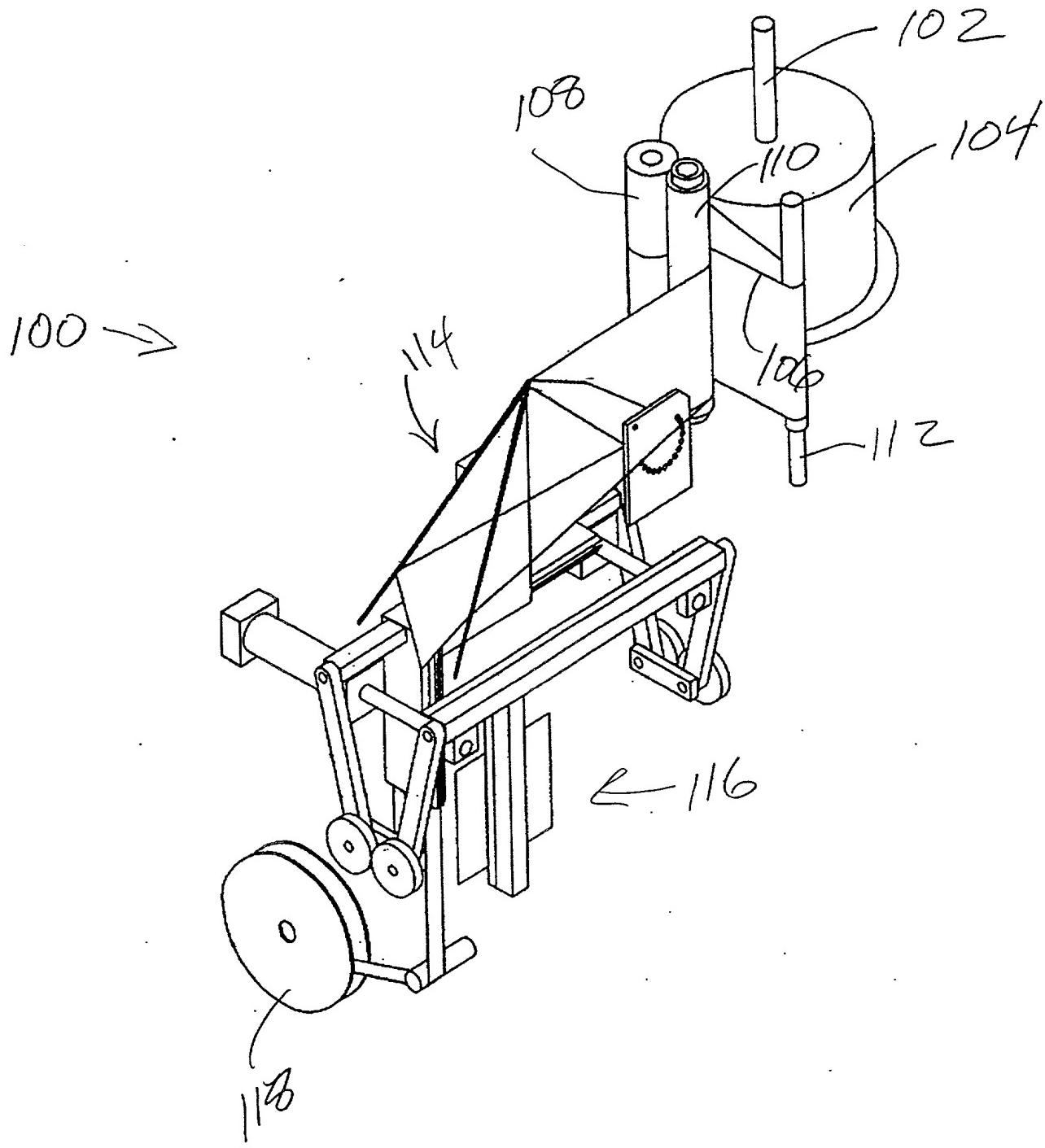


Figure 4

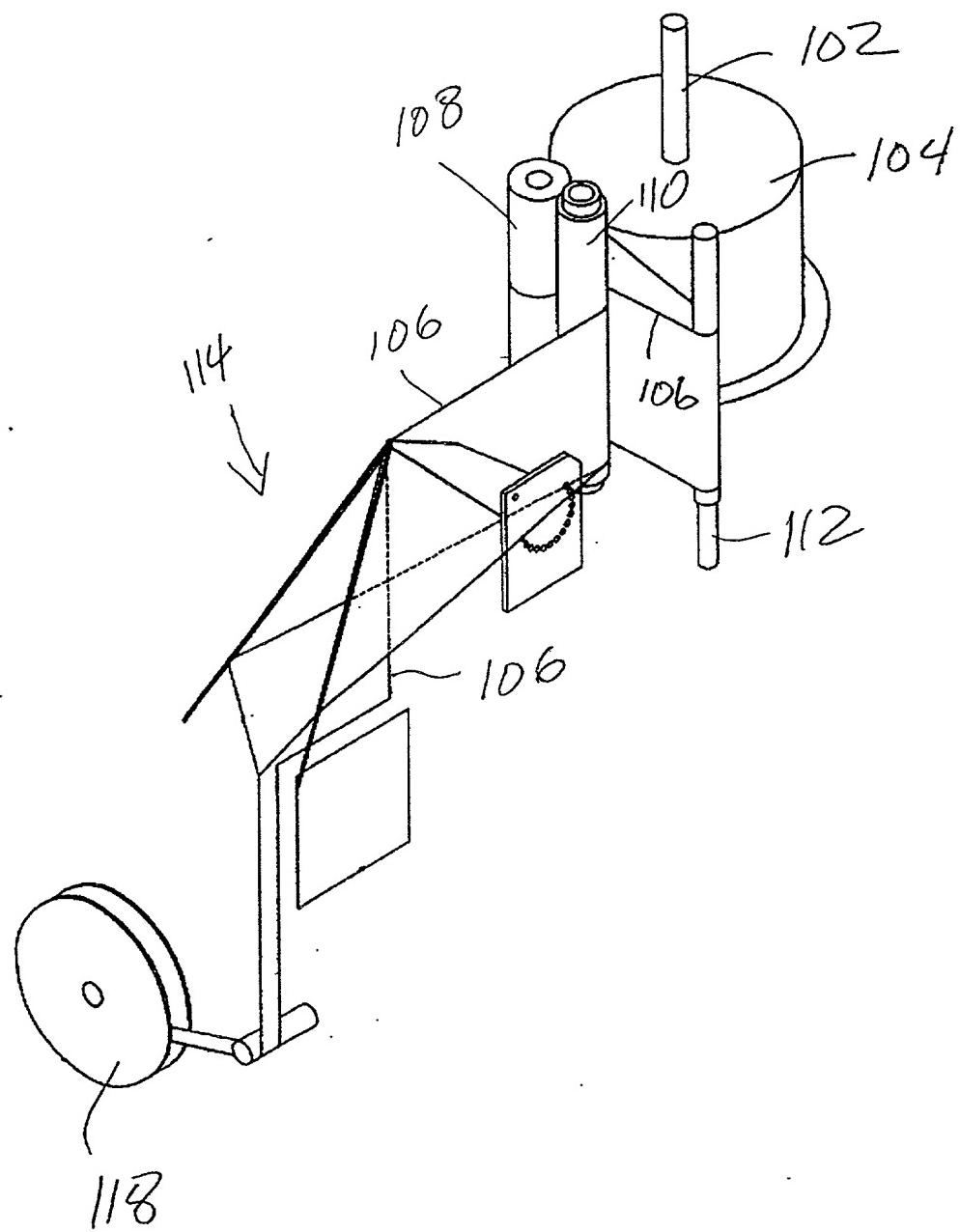


Figure 5

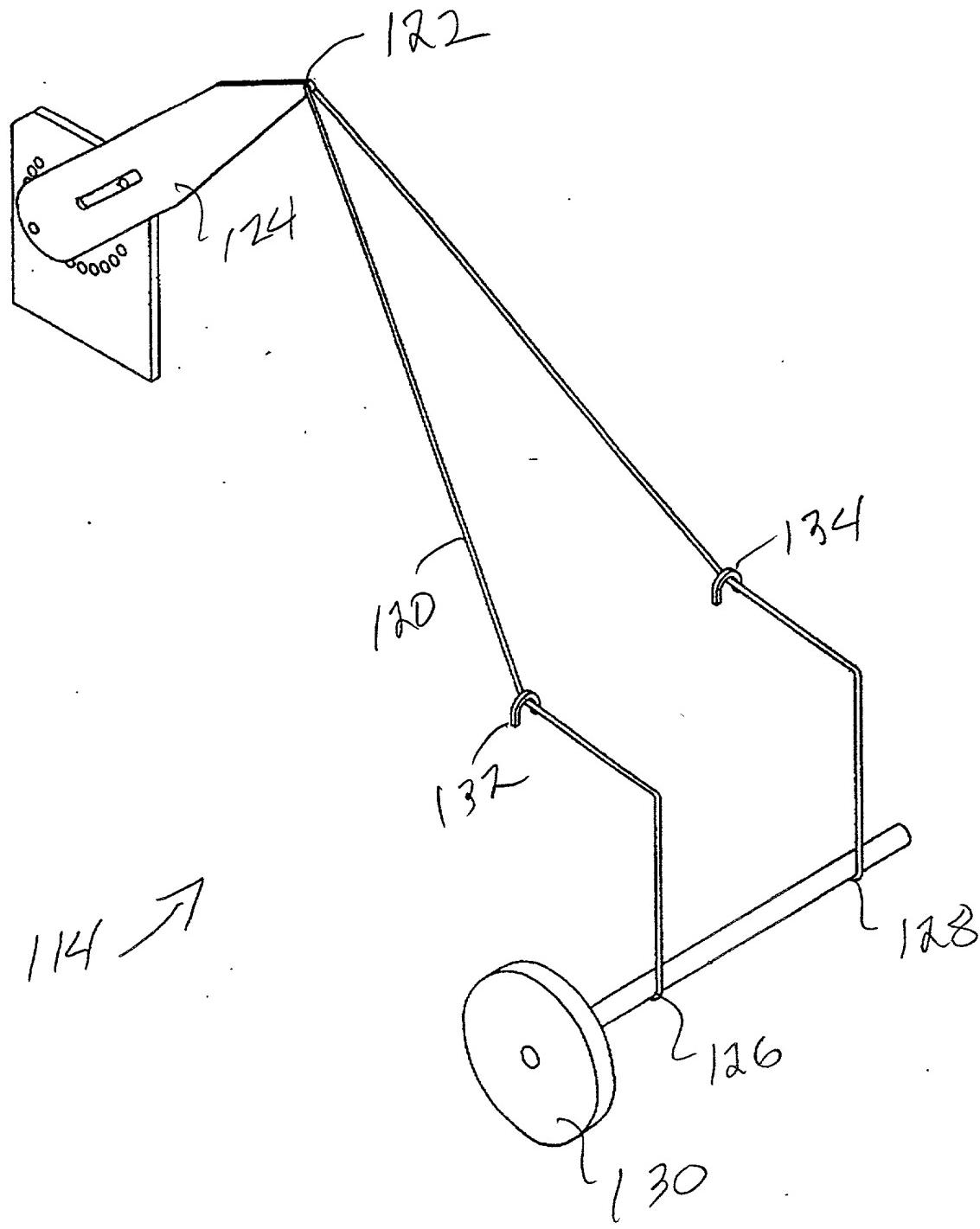


Figure 6

Figure 7

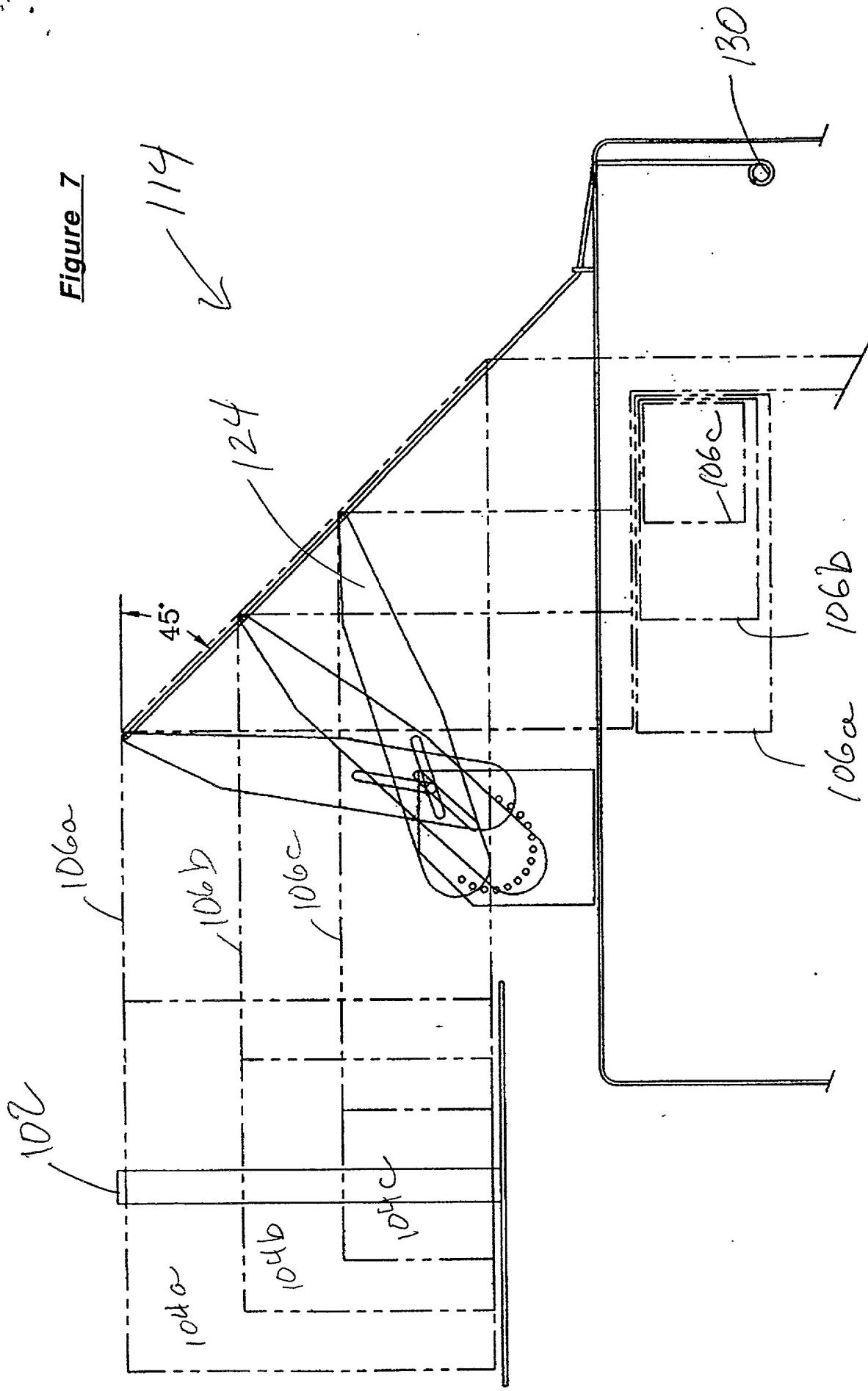
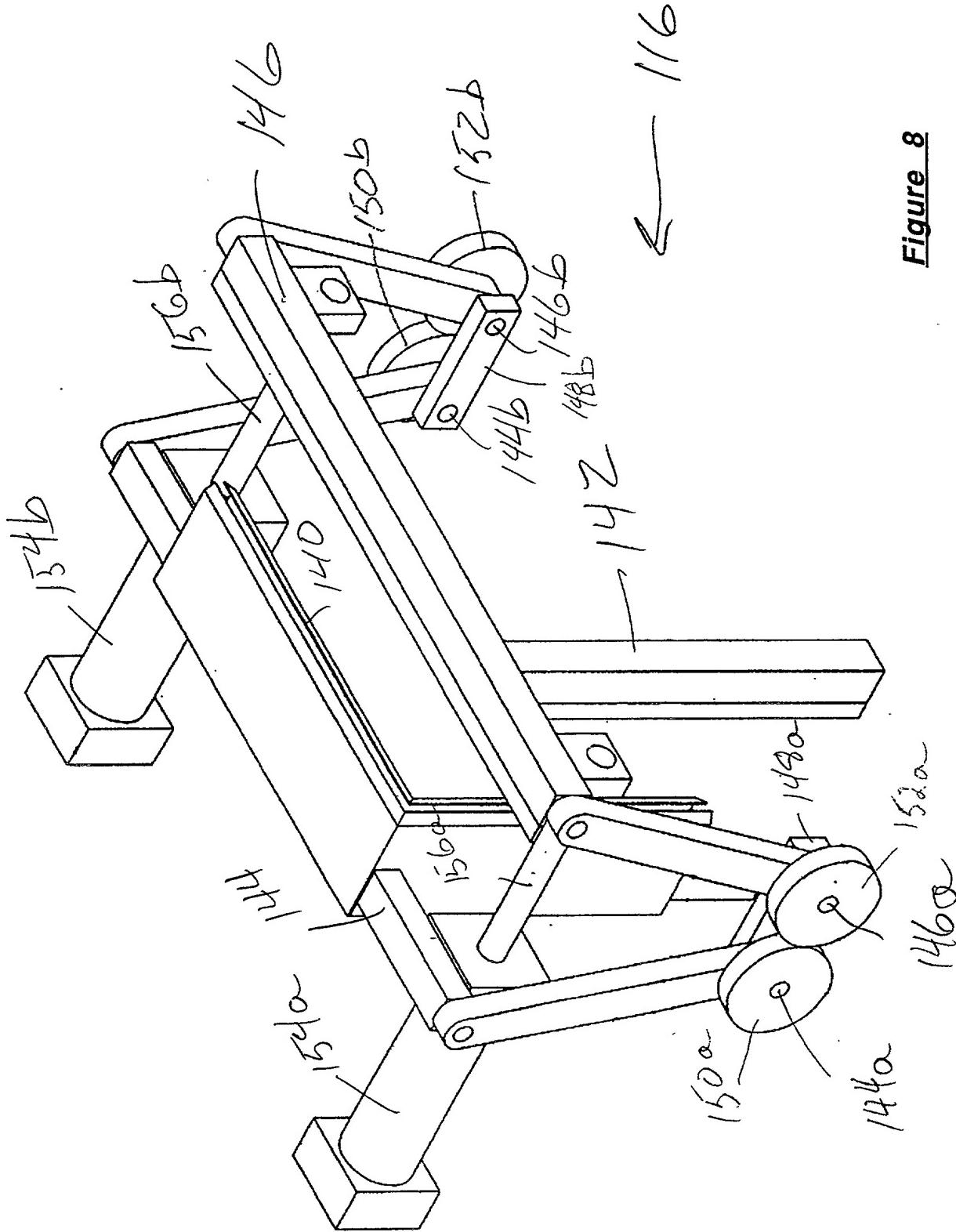


Figure 8



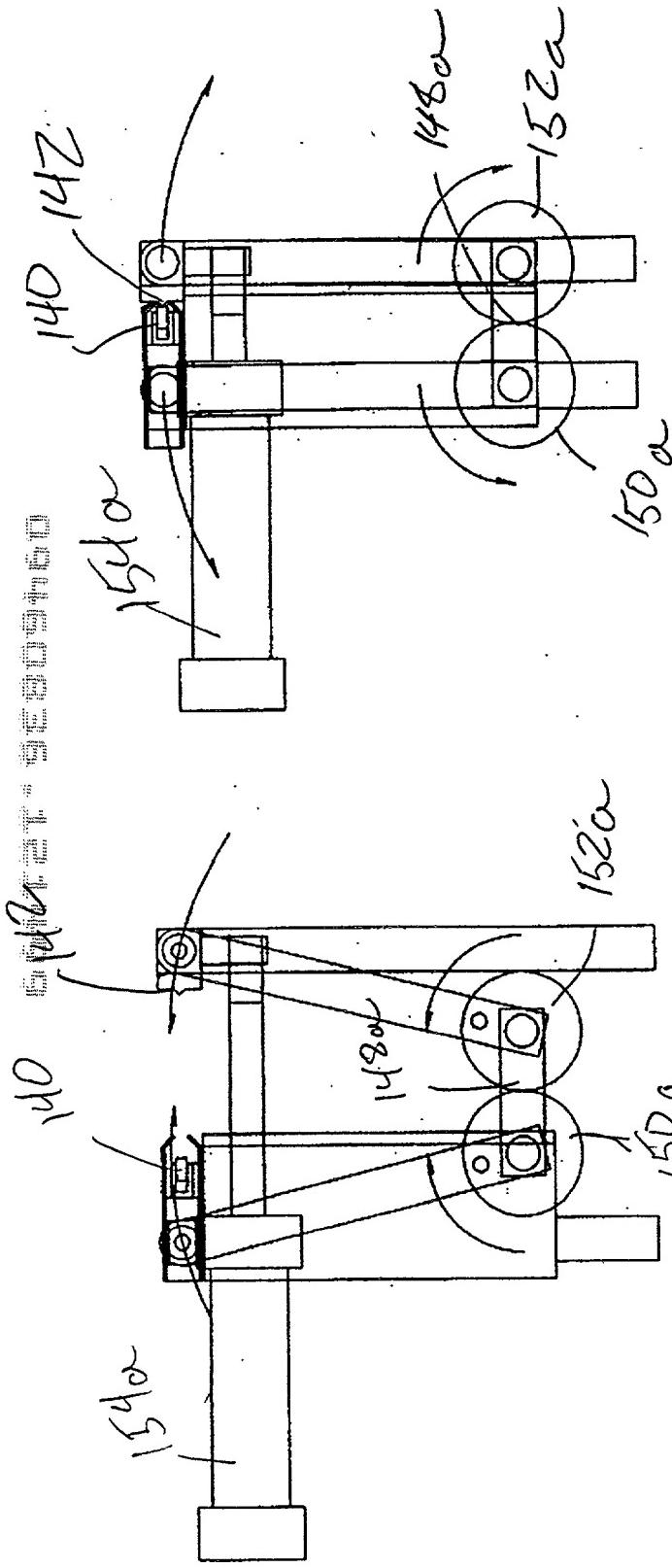
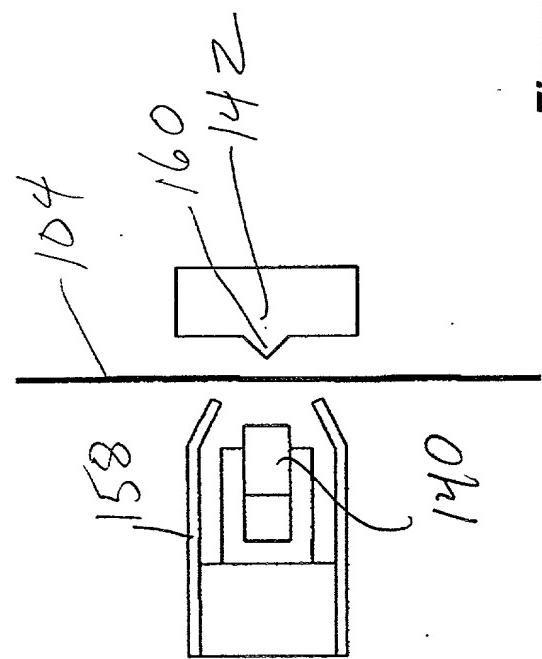


Figure 9b



As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

VERTICAL BAGGING APPARATUS

the specification of which (check only one item below):

is attached hereto.

was filed as United States application

Serial No. _____

on _____,

and was amended

on _____ (if applicable).

was filed as PCT international application

Number _____

on _____,

and was amended under PCT Article 19

on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability of this application as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
 (Includes Reference to PCT International Applications)

ATTORNEY'S DOCKET NUMBER
 395-6

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR BENEFIT UNDER 35 U.S.C. 120:

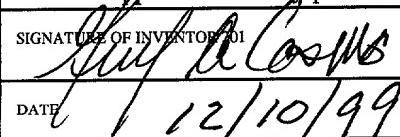
U.S. APPLICATIONS		STATUS (Check One)		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.				
PCT APPLICATION NO.	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (if any)		

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (*List name and registration numbers*):

THOMAS M. GALGANO, Registration No. 27,638
 DANIEL P. BURKE, Registration No. 30,735

Send Correspondence to:		Thomas M. Galgano, Esq., Galgano & Burke 300 Rabro Drive, Suite 135, Hauppauge, New York 11788		Direct Telephone Calls to: <i>(name and telephone number)</i> (516) 582-6161
2	FAMILY NAME OF INVENTOR	COSMO	FIRST GIVEN NAME GUY	SECOND GIVEN NAME A.
10	RESIDENCE & CITIZENSHIP	CITY SOUTH SETAUKEET	STATE OR FOREIGN COUNTRY NEW YORK	COUNTRY OF CITIZENSHIP U.S.A.
20	POST OFFICE ADDRESS	POST OFFICE ADDRESS 71 STRATHMORE VILLAGE DRIVE	CITY SOUTH SETAUKEET	STATE & ZIP CODE/COUNTRY NEW YORK 11720
2	FAMILY NAME OF INVENTOR		FIRST GIVEN NAME	SECOND GIVEN NAME
0	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
2	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY
2	FAMILY NAME OF INVENTOR		FIRST GIVEN NAME	SECOND GIVEN NAME
0	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP
3	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 01 	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE 12/10/99	DATE	DATE